121887-1
(GP2-0253)

AMENDMENTS TO THE CLAIMS

[No amendments have been made to the claims. Although not required, a complete listing of claims is provided for the convenience of the Examiner.]

1. (original) A method of precipitating a poly(arylene ether), comprising:

preparing a poly(arylene ether) solution comprising a poly(arylene ether) and a solvent;

combining said poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion comprising a poly(arylene ether) solid;

separating said poly(arylene ether) solid from said poly(arylene ether) dispersion to form an isolated poly(arylene ether) solid;

determining a particle size distribution of said poly(arylene ether) solid prior to said separating said poly(arylene ether) solid from said poly(arylene ether) dispersion; and

adjusting a precipitation parameter in response to said particle size distribution.

2. (original) The method of Claim 1, wherein said determining said particle size distribution is conducted within 1,000 seconds of said combining said poly(arylene ether) solution with said antisolvent.

3. (original) The method of Claim 1, wherein said determining said particle size distribution is conducted within 120 seconds of said combining said poly(arylene ether) solution with said antisolvent.

4. (original) The method of Claim 1, wherein said determining said particle size distribution is conducted within 30 seconds of said combining said poly(arylene ether) solution with said antisolvent.

5. (original) The method of Claim 1, wherein said determining said particle size distribution is conducted without substantially diverting or removing said poly(arylene ether) dispersion.

6. (original) The method of Claim 1, wherein said determining said particle size distribution is conducted continuously.

7. (original) The method of Claim 1, wherein said determining said particle size distribution is determined within 10 seconds.

8. (original) The method of Claim 1, wherein said determining said particle size distribution comprises a laser back-scattering technique.

9. (original) The method of Claim 1, wherein said determining said particle size distribution comprises a laser back-scattering technique providing particle counting.

10. (original) The method of Claim 1, wherein said adjusting a precipitation parameter value comprises adjusting the antisolvent composition.

11. (original) The method of Claim 10, wherein said adjusting said antisolvent composition increases the solubility of said poly(arylene ether) in said first poly(arylene ether) dispersion and/or decreases the coagulation tendency of said poly(arylene ether) in said first poly(arylene ether) dispersion.

12. (original) The method of Claim 10, wherein said adjusting said antisolvent composition decreases the solubility of said poly(arylene ether) in said first poly(arylene ether) dispersion and/or increases the coagulation tendency of said poly(arylene ether) in said first poly(arylene ether) dispersion.

13. (original) The method of Claim 10, wherein said antisolvent comprises a water concentration, and wherein said adjusting said antisolvent composition comprises changing said water concentration.

121887-1
(GP2-0253)

14. (original) The method of Claim 10, wherein said antisolvent comprises a toluene concentration, and wherein said adjusting said antisolvent composition comprises changing said toluene concentration.

15. (original) The method of Claim 10, wherein said antisolvent comprises an alkanol concentration, and wherein said adjusting said antisolvent composition comprises changing said alkanol concentration.

16. (original) The method of Claim 1, wherein said combining said poly(arylene ether) solution with said antisolvent is characterized by a volume ratio of said poly(arylene ether) solution to said antisolvent, and wherein said adjusting said precipitation parameter comprises changing said volume ratio.

17. (original) The method of Claim 1, wherein said adjusting a precipitation parameter comprises adjusting the antisolvent temperature.

18. (original) The method of Claim 1, wherein said adjusting a precipitation parameter comprises adjusting the poly(arylene ether) solution composition.

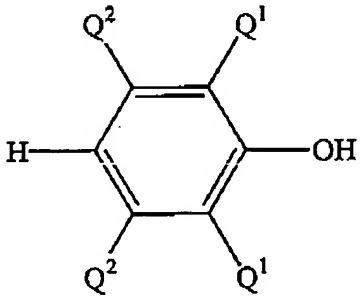
19. (original) The method of Claim 1, wherein said adjusting a precipitation parameter comprises adjusting the poly(arylene ether) solution temperature.

20. (original) The method of Claim 1, wherein said adjusting a precipitation parameter comprises adjusting the inlet pressure or outlet pressure of the mixing pump.

21. (original) The method of Claim 1, wherein said combining the poly(arylene ether) solution with said antisolvent is characterized by a shear rate, and wherein said adjusting a precipitation parameter comprises adjusting said shear rate.

121887-1
(GP2-0253)

22. (original) The method of Claim 1, wherein said poly(arylene ether) is a polymerization product of at least one monohydric phenol having the formula



wherein each Q^1 is independently selected from the group consisting of halogen, C_1-C_7 primary or secondary alkyl, phenyl, C_1-C_7 haloalkyl, C_1-C_7 aminoalkyl, C_1-C_7 hydrocarbonoxy, and C_2-C_7 halohydrocarbonoxy wherein at least two carbon atoms separate the halogen and oxygen atoms; and each Q^2 is independently selected from the group consisting of hydrogen, halogen, C_1-C_7 primary or secondary alkyl, phenyl, C_1-C_7 haloalkyl, C_1-C_7 hydrocarbonoxy, and C_2-C_7 halohydrocarbonoxy wherein at least two carbon atoms separate the halogen and oxygen atoms.

23. (original) The method of Claim 1, wherein said poly(arylene ether) has an intrinsic viscosity of about 0.2 to about 1.0 deciliters per gram measured at 25°C in chloroform.

24. (original) The method of Claim 1, wherein said poly(arylene ether) has an intrinsic viscosity less than or equal to 0.65 deciliters per gram measured at 25°C in chloroform.

25. (original) The method of Claim 1, wherein said poly(arylene ether) solution comprises about 10 to about 50 weight percent of said poly(arylene ether), based on the total weight of said poly(arylene ether) solution.

26. (original) The method of Claim 1, wherein said solvent comprises a C_6-C_{18} aromatic hydrocarbon.

27. (original) The method of Claim 1, wherein said antisolvent comprises a compound selected from the group consisting of alkanols having one to about ten carbon atoms, ketones having three to about ten carbon atoms, alkanes having five to about ten carbon atoms, and combinations thereof.

28. (original) The method of Claim 1, wherein said antisolvent comprises an alkanol having one to about ten carbon atoms.

29. (original) The method of Claim 1, wherein said antisolvent comprises about 60 to 99.8 weight percent methanol, 0.1 to about 35 weight percent toluene, and 0.1 to about 10 weight percent water.

30. (original) The method of Claim 1, wherein said combining said poly(arylene ether) solution with said antisolvent comprises combining said poly(arylene ether) at a temperature of about 70°C to about 100°C with said antisolvent at a temperature of about 15°C to about 60°C.

31. (original) The method of Claim 1, wherein combining said poly(arylene ether) solution with said antisolvent comprises mixing with a shear rate of about 500 sec^{-1} to about 50,000 sec^{-1}.

32. (original) The method of Claim 1, wherein combining said poly(arylene ether) solution with said antisolvent comprises mixing in a stirred tank.

33. (original) The method of Claim 1, wherein said adjusting a precipitation parameter is performed within about 60 seconds of said determining said particle size distribution.

34. (original) The method of Claim 1, wherein said separating said poly(arylene ether) solid from said poly(arylene ether) dispersion comprises filtration.

35. (original) The method of Claim 1, wherein said isolated poly(arylene ether) solid has a mean particle size of about 20 micrometers to about 100 micrometers.

36. (original) The method of Claim 1, wherein said solvent is substantially free of any C_1-C_6 alkanol.

37. (original) The method of Claim 1, wherein said poly(arylene ether) solution is substantially free of particles greater than 1 micrometer.

38. (original) The method of Claim 1, further comprising determining a particle size distribution of said isolated poly(arylene ether) solid.

39. (original) A method of precipitating a poly(arylene ether), comprising:

preparing a poly(arylene ether) solution comprising a poly(arylene ether) and a solvent, wherein said solvent comprises a C_6-C_{18} aromatic hydrocarbon;

combining said poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion, wherein said antisolvent comprises water and a compound selected from the group consisting of alkanols having one to about ten carbon atoms, ketones having three to about ten carbon atoms, alkanes having five to about ten carbon atoms, and combinations thereof;

determining a particle size distribution in said poly(arylene ether) dispersion within about 30 seconds of said combining said poly(arylene ether) solution with said antisolvent; and

adjusting a precipitation parameter in response to said particle size distribution.

121887-1
(GP2-0253)

40. (original) A method of precipitating a poly(arylene ether), comprising:

preparing a poly(arylene ether) solution comprising a poly(arylene ether) and a solvent; wherein said poly(arylene ether) is the polymerization product of a monohydric phenol comprising 2,6-dimethylphenol, 2,3,6-trimethylphenol, or a combination thereof; and wherein said solvent comprises toluene;

combining said poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion; wherein said antisolvent comprises methanol, toluene and water;

determining a particle size distribution in said poly(arylene ether) dispersion within about 20 seconds of said combining said poly(arylene ether) solution with said antisolvent; and

adjusting the antisolvent composition in response to said particle size distribution.

41. (original) A method of preparing a poly(arylene ether), comprising:

oxidatively coupling a monohydric phenol using an oxygen-containing gas in the presence of a first solvent and a complex metal catalyst to produce a poly(arylene ether) solution;

combining said poly(arylene ether) solution with a first antisolvent to form a poly(arylene ether) dispersion comprising a poly(arylene ether) solid;

separating said poly(arylene ether) solid from said poly(arylene ether) dispersion to form an isolated poly(arylene ether) solid;

determining a particle size distribution of said poly(arylene ether) solid prior to said separating said poly(arylene ether) solid from said poly(arylene ether) dispersion; and

adjusting a precipitation parameter in response to said particle size distribution.

42. (original) The method of Claim 41, further comprising concentrating said poly(arylene ether solution) prior to said combining said poly(arylene ether) solution with said first antisolvent.

43. (original) The method of Claim 41, further comprising diluting said poly(arylene ether solution) with said first solvent prior to said combining said poly(arylene ether) solution with said first antisolvent.

44. (withdrawn) An apparatus for precipitating a poly(arylene ether), comprising:

means for preparing a poly(arylene ether) solution comprising a poly(arylene ether) and a solvent;

means for combining said poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion comprising a poly(arylene ether) solid;

means for separating said poly(arylene ether) solid from said poly(arylene ether) dispersion to form an isolated poly(arylene ether) solid;

means for determining a particle size distribution of said poly(arylene ether) solid prior to said separating said poly(arylene ether) solid from said poly(arylene ether) dispersion; and

means for adjusting a precipitation parameter in response to said particle size distribution.

121887-1
(GP2-0253)

45. (withdrawn) An apparatus for preparing a poly(arylene ether), comprising:

a reactor for polymerizing a monohydric phenol in a solvent to form a poly(arylene ether) solution;

a preconcentration unit in fluid communication with said reactor, for concentrating said poly(arylene ether) solution by removing a portion of said solvent;

a mixing pump in fluid communication with said preconcentration unit, for combining said poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion comprising a poly(arylene ether) solid, wherein said pump mixes said poly(arylene ether) solution with said antisolvent at a shear rate of about 500 to about 50,000 sec^{-1};

a precipitation tank in fluid communication with said mixing pump, for aging said poly(arylene ether) dispersion;

a filtration unit in fluid communication with said precipitation tank, for separating said poly(arylene ether) solid from said solvent and said antisolvent;

a particle size distribution determination unit for determining a particle size distribution of said poly(arylene ether) solid, wherein said particle size distribution determination unit is interposed between said mixing pump and said precipitation tank; and

a feedback loop in operative communication with said particle size distribution determination unit and said mixing pump, for adjusting a precipitation parameter in response to said particle size distribution.

121887-1
(GP2-0253)

46. (withdrawn) An apparatus for preparing a poly(arylene ether), comprising:

a reactor for polymerizing a monohydric phenol in a solvent to form a poly(arylene ether) solution;

a preconcentration unit in fluid communication with said reactor, for concentrating said poly(arylene ether) solution by removing a portion of said solvent;

a mixing pump in fluid communication with said preconcentration unit, for combining said poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion comprising a poly(arylene ether) solid;

a precipitation tank unit in fluid communication with said mixing pump, for aging said poly(arylene ether) dispersion;

a filtration unit in fluid communication with said precipitation tank, for separating said poly(arylene ether) solid from said solvent and said antisolvent;

a particle size distribution determination unit for determining a particle size distribution of said poly(arylene ether) solid, wherein said particle size distribution determination unit is interposed between said precipitation tank and said filtration unit; and

a feedback loop in operative communication with said particle size determination unit and said mixing pump, for adjusting a precipitation parameter in response to said particle size distribution.

121887-1
(GP2-0253)

47. (withdrawn) An apparatus for preparing a poly(arylene ether), comprising:

a reactor for polymerizing a monohydric phenol in a solvent to form a poly(arylene ether) solution;

a flash vessel in fluid communication with said reactor, for concentrating said poly(arylene ether) solution by removing a portion of said solvent to form a concentrated poly(arylene ether) solution;

a mixing pump in fluid communication with said flash drum, for combining said concentrated poly(arylene ether) solution with an antisolvent to form a poly(arylene ether) dispersion comprising a poly(arylene ether) solid, wherein said mixing pump mixes said poly(arylene ether) solution with said antisolvent at a shear rate of about 500 to about 50,000 sec^{-1};

a first precipitation tank in fluid communication with said mixing pump, for aging said poly(arylene ether) dispersion;

a second precipitation tank in fluid communication with said first precipitation tank, for aging said poly(arylene ether) dispersion;

a third precipitation tank in fluid communication with said second precipitation tank, for aging said poly(arylene ether) dispersion;

a filtration unit in fluid communication with said third precipitation tank for separating said poly(arylene ether) solid from said solvent and said poly(arylene ether) dispersion;

a filtrate tank in fluid communication with said rotary vacuum filter, for receiving said solvent and said antisolvent from said rotary vacuum filter;

a first reslurry tank in fluid communication with said filtration unit, for combining said poly(arylene ether) solid with a second antisolvent;

a first centrifuge in fluid communication with said first reslurry tank, for separating said poly(arylene ether) solid from said second antisolvent;

a first centrifuge effluent tank in fluid communication with said first centrifuge, for receiving said second antisolvent from said first centrifuge;

a second reslurry tank in fluid communication with said first centrifuge, for combining said poly(arylene ether) solid with a third antisolvent;

a second centrifuge in fluid communication with said second reslurry tank, for separating said poly(arylene ether) solid from said third antisolvent;

a dryer in fluid communication with said second centrifuge, for removing volatiles from said poly(arylene ether) solid;

a particle size distribution determination unit interposed between said pump and said first precipitation tank; and

a feedback loop in operative communication with said particle size distribution determination unit and said mixing pump, for adjusting the antisolvent composition in response to said particle size distribution.